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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,126	02/07/2002	Brian Thomas Berkowitz	MS172076.1/40062.161US01	2555

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EXAMINER

HO, THANG H

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 10/03/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/072,126

Applicant(s)

BERKOWITZ ET AL.

Examiner

Thang H Ho

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. Applicant is reminded of the duty to fully disclose information under 37 CFR 1.56.

Specification

2. Claims 1-32 are presented for examination.
3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is required in correcting any errors of which applicant may become aware in the specification. Appropriate correction is required.

Claim Objections

4. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 15-27 has been renumbered to 14-26, respectively.

5. Claim 1 is objected to because of the following informalities:

The recitation of "point-in copy" should be changed to read --point-in-time copy--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamer et al. (USPN: 6,035,412), hereinafter Tamer.

As per claim 1, Tamer discloses a method of transporting data from a sending host computer system to a receiving host computer system, the data being stored on a plurality of LUNs, the method comprising:

- o creating a point-in copy of a volume, the volume having the data to be transported [(Figure 1A)];
- o generating a backup components document, wherein the document includes location information related to the data to be transported [(Figure 1A, element 7, column 8, lines 34-50 “... *controller also generates an ordered list...*”, Figure 4A, step 104, column 10, lines 50-52 “*The backup console passes the list of datafiles to the backup server...*”)];
- o importing the backup components document to the receiving host computer system [(Figure 4A, step 106), column 10, lines 52-55 “...*the backup server... imports...*”]; and
- o accessing transported data using information in the backup components document [(Figure 4A, step 108, column 10, lines 55-57 “...*the backup server starts the backup session...*”)].

As per claim 2, Tamer discloses a method as defined in claim 1 wherein the backup components document comprises: a self-contained description of where the data

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resides and how the data is to be restored [(column 8, lines 35-37 "*Each entry... identifies a volume ... and a particular tracks within that volume.*")].

As per claim 3, Tamer discloses a method as defined in claim 2 wherein the backup components document further comprises: a description of physical resources necessary to restore and access the data [(column 8, lines 35-37 "*Each entry... identifies a volume ... and a particular tracks within that volume.*")].

As per claim 4, Tamer discloses a method as defined in claim 1 further comprising:

- identifying a set of original volumes to be copied and transported, the set comprising two or more volumes of data [(Figure 1A, elements 3 and 5, column 2, lines 30-33 "*The method further includes... data storage systems with a plurality of data storage volumes...*", Figure 4A, step 102, column 10, lines 43-57)];
- creating a point-in-time copy of the set of volumes [(Figure 4A, step 108, columns 10, lines 55-57)] ;
- importing the set of volumes onto the receiving host computer system [(Figure 4A, step 106)]; and
- reconstructing set information relating to mapping information from the original volumes to the point-in-time copy volumes from the receiving host computer system [(Figure 4A, step 106)].

As per claim 5, Tamer discloses a method as defined in claim 4 further comprising:

- following the act of identifying a set of original volumes to be copied and transported and prior to the act of creating the point-in-time copy, determining the plurality of LUNs that compose the volume [(Figure 3, column 7, lines 62-column 8, lines 33-37)];
- polling a plurality of providers in the network environment to determine whether the LUNs are supported [*(It is interpreted that polling for a provider capable of supporting LUNs is inherent in order to support data mirroring between volumes)*];
- determining one provider that supports the LUNs that compose the volume to create the point-in-time copy [*(It is interpreted that polling for a provider capable of supporting LUNs is inherent in order to support data mirroring between volumes)*]; and
- instructing the provider that supports the LUNs that compose the volume to create the point-in-time copy [(Figure 4A, step 108, column 10, lines 55-57 “... the backup server starts the backup session...”)].

As per claim 9, Tamer discloses a method as defined in claim 1 wherein the data to be transferred comprises a volume of data and wherein the volume of data is stored on at least a portion of one or more LUNs, the method further comprising:

- storing the original state of portions of the LUNs to be copied [(Figure 4A, steps 102 “....break the SRDF link.... enable R2 devices”)];
- opening a volume handle to allow marking of the volume [(Figure 4A, step 106 “...enables volume group... ”)];

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- marking portions of the original LUNs to identify the portions as being associated with the volume to be transported [(column 9, lines 8-10) "*Prior to cutting the link... the slave unit is not W enabled.*"];
- creating the point-in-time copy of each LUN having a portion of the volume to transported [(Figure 4A, step 108, column 10, lines 55-57 "... *the backup server starts the backup session...*");
- closing the volume handle [(Figure 4A, step 112 "...*disables volume group...*"); and
- restoring the volume to its original state [(Figure 4A, steps 114 "... *Disable R2 devices... Resume link*");].

As per claim 10, Tamer discloses a method as defined in claim 9 wherein the act of closing the volume handle is caused by a system crash [(It is inherent that the volume handle will closed in an event of a system crash)].

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamer et al. (USPN: 6,035,412).

Tamer teaches the method as claimed. However, Tamer does not particularly teach the backup component document comprising an XML document.

Nevertheless, it is well known in the art that XML are commonly used for its portability and the ability to define custom set of tags including tags representing data description or data relationships providing advanced searching. Furthermore, XML separates document structure from content from presentation thereby improving user response, network load, and server load.

Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to implement the method as taught by Tamer and to implement backup document as XML document to generate the claimed invention with a reasonable expectation of success for the reasons set forth above.

10. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamer et al. (USPN: 6,035,412) in view of Hall (US-PGPUB 2001/0016904).

Tamer teaches a method as defined in claim 1 wherein the data to be transferred comprises a volume of data and wherein the volume of data is stored on at least a portion of one or more LUNs, the method further comprising:

- o marking portions of the original LUNs to identify the portions as being associated with the volume to be transported [(Figure 1A, elements 5 and 7, column 7, lines 62-64 "*The bit maps are used to identify...*", column 8, lines 33-37 "*... controller also generates an ordered list 7 of modified tracks. Each entry in the ordered list 7 indentifies a volume... and a particular track within that volume.*");];

- creating a point-in-time copy of each LUN having a portion of the volume to be transported [(Figure 4A, step 108, column 10, lines 55-57 “... *the backup server starts the backup session...*”)]; and
- evaluating the marked portions of the point-in-time copy LUNs [(column 10, lines 14-29 “*So when the link is reestablished,... the corresponding bits are cleared.*”)]; and
- marking the portions being associated with the volume to be transported as read-only [(column 9, lines 8-10) “*Prior to cutting the link... the slave unit is not W enabled.*”].

However, Tamer does not teach the hiding of portions of the point-in-time copy LUNs not associated with the volume to be transported.

Hall teaches a method for masking LUN in a shared data storage system to hide the masked LUNs from the operating system to facilitate controlling access of LUNs within a shared data storage system [(column 1, 4th paragraph “*There are two approaches... Masked LUNs are hidden from the operating system.*”)].

Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to implement the method as taught by Tamer and to utilize Hall’s LUNs masking technique to mark the associated and unassociated portions accordingly to generate the claimed invention with a reasonable expectation of success for the reasons set forth above.

11. Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamer et al. (USPN: 6,035,412) in view of Fujibayashi (US-PGPUB: 2003/0131278).

Tamer teaches the method as defined in claim 1 as claimed. However, Tamer does not specifically teach the method for deleting one of the point-in-time copy volumes while maintaining at least one other point-in-time copy volume.

Fujibayashi teaches the method for deleting one of the point-in-time copy volumes while maintaining at least one other point-in-time copy volume to allow fast restoration of the point-in-time copy volume [(page 2, paragraph 23 "*Control manager engine 200... enables a user to select the snapshot volumes to use (and therefore which snapshots to delete)...*").

Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to implement the method as taught by Tamer and to implement deletion of a copy of point-on-time copy volumes while maintaining the other volumes as taught by Fujibayashi to generate the claimed invention with a reasonable expectation of success for the reasons set forth above.

12. Claims 12-13 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamer et al. (USPN: 6,035,412) in view of Tzelnic et al (USPN: 6,366,987), hereinafter Tzelnic.

Tamer teaches a method as defined in claim 1 as claimed. However, Tamer teaches neither the method for identifying and requesting information relating to each of the LUN copies nor the method for storing the encoded instructions for executing the method on a computer readable medium.

Tzelnic teaches the method for identifying LUN copies to physical storage translation allowing fast restoration of data in an event of a storage system failure [(Abstract, column 11, lines 64 et seq.)].

Tzelnic further teaches a computer readable medium carrying computer-executable instructions for implementing the claimed method to facilitate the transporting and installing of the method on other systems [(column 29, lines 39-65 "*25. A machine readable program...*")].

Accordingly, it would have been prima facie obvious for one skilled in the art at the time the invention was made to implement the method as taught by Tamer and to utilize Hall's LUNs masking technique to mark the associated and unassociated portions accordingly and to implement the method on a computer readable medium to generate the claimed invention with a reasonable expectation of success for the reasons set forth above.

13. As per claims 28-32, the claims encompass the same scope of invention as to that of claims 1-9, however the claims are drafted as apparatus format rather than method format, the claims are therefore rejected for the same reasons as being set forth above.

Allowable Subject Matter

14. Claims 15-22 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See Form PTO-892.

16. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

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Washington, D.C. 20231

Or faxed to:

After-final (703) 746-7238

Official (703) 746-7239

Non-Official/Draft (703) 746-7240

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thang H Ho whose telephone number is 703-305-1888. The examiner can normally be reached on Monday-Friday from 7:00 A.M. - 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 703-306-2903. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-6606 for regular communications and 703-308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

TH
September 24, 2003

Kevin L. Ellis
Primary Examiner

Kevin L. Ellis